THE CLAIMS:

1. A method for analyzing a plurality of fluid specimens with a single analyzing instrument comprising the steps for:

a) preparing a plurality of N fluid specimens;

b) introducing a first combination of r specimens wherein r is less than N into a homogenizing volume to create a homogenized specimen;

c) introducing at least a portion of the homogenized specimen to the analyzing instrument and recording the results of the analysis maintaining an association with the combination of r specimens;

d) introducing additional different combinations of specimens into said homogenizing volume and repeating steps b) and c); and

e) with a programmed digital computer mathematically processing the recorded results to produce analyses corresponding to individual fluid specimens.

2. The method according to claim 1, wherein the fluid specimens are gaseous specimens diluted with a carrier gas.

3. The method according to claim 2, wherein the analyzing instrument is a mass spectrometer.

4. The method according to claim 3, wherein the mathematical processing comprises deconvolution.

5. The method according to claim 4, wherein the mathematical processing comprises a Hadamard transform.

6. The method according to claim 1, wherein each specimen is directed into the homogenizing volume from individual nozzles connected to electronically controlled valves.

7. The method according to claim 6, wherein the nozzle sizes, pressure drops therethrough, and open times of said valves is controlled to introduce a specified mass of each fluid specimen into the homogenizing volume.

8. The method according to claim 7, wherein when the nozzles are not supplying specimen to the homogenizing volume the flow of the specimen is diverted and continued.

9. The method according to claim 1, wherein N is an odd number greater than 2 and r is an even number equal to (N+1)/2.

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